IN THE CLAIMS

Please amend claims 1, 20 and 21, and add new claim 25, such that pending claims 1-25 are as follows:

1. (Currently Amended) Image encoding method, characterized in that it comprises, for a field corresponding to at least one image portion, the following steps:

- the definition (21) of a minimum triangular partition overlapping said domain thereby defining source triangles;
- the association, with each of said source triangles, of a square matrix (34) representing said source triangle (31), by means of a first invertible transformation (22, 23);
- the application (24) of a second decorrelating invertible transformation to each of said square matrices, delivering transformed matrices.

2. (Original) Image encoding method according to the claim 1, characterized in that said step of associating a square matrix comprises the following steps:

- the affine transformation (32) of a source triangle (31) into an isosceles rectangular triangle (33) called a reference triangle;
- the creation (36) of a square matrix (34) whose lower part includes data representing said isosceles rectangular triangle (33);
- the symmetrizing (35) of said square matrix.

3. (Original) Image encoding method according to the claim 2, characterized in that said step for the creation (36) of a square matrix implements a scale factor enabling an expansion or compression in the space domain.

4. (Original) Image encoding method according to the claim 3, characterized in that said

☑ The Director is hereby further authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50/2998, Deposit Account Name: Shewchuk IP Services. I have enclosed a duplicate copy of this sheet.

☑ I am the attorney or agent of record. Registration Number 37,235.

Respectfully submitted,

SHEWCHUK IP SERVICES, LLC

By: _____

Jeffrey D. Shewchuk, Reg. No. 37,235
533 77th Street West
Eagan, MN 55121
Telephone: (612) 331-9558
Fax: (612) 688-3348

JDS
:

square matrix may comprise $E(\alpha \times \sqrt{2 \times A})$ lines where E represents the higher integer part, A being the area of said isosceles rectangular triangle.

5. (Previously Amended) Image encoding method according to claim 1, characterized in that said second transformation belongs to the group comprising:

- the Karhunen Loève transformation (KLT),
- the discrete Fourier transformation (DFT),
- the discrete cosine transformation (DCT),
- and the Walsh-Hadamard transformation (WHT).

6. (Previously Amended) Image encoding method according to claim 1, characterized in that it comprises a step for the quantification (25) and encoding (26) of data of the lower part of said transformed matrix.

7. (Original) Image encoding method according to the claim 6, characterized in that said quantification (25) belongs to the group comprising:

- a uniform quantification;
- a zigzag route quantification, the quantification pitch being incremented as and when the route is travelled;
- a quantification based on at least one weighting matrix that is pre-evaluated or optimized for the processed image.

8. (Previously Amended) Image encoding method according to claim 4, characterized in that said scale factor α, the type of quantification and/or the quantification pitch can be modified for each of said triangles and/or for each of said image portions.

9. (Previously Amended) Image encoding method according to claim 6, characterized in

that it comprises a step of RLE (Run Length Encoding) and entropic coding (26) of the quantified data.

10. (Previously Amended) Image encoding method according to claim 1, characterized in that said triangular partition is obtained according to a method that takes account of the contents of the image or the image portion.

11. (Previously Amended) Image encoding method according to claim 10, characterized in that said method advantageously belongs to the group comprising:

- methods based on fractal decomposition;
- matching pursuit methods;
- methods implementing an SADCT ("Shape Adapative DCT"):
- methods implementing a DCT.

12. (Previously Amended) Image encoding method according to claim 1, characterized in that it is implemented (106) on image portions having a texture whose representation error is above a given threshold (103).

13. (Previously Amended) Image encoding method according to claim 1, characterized in that said representation error corresponds to a luminance deviation between said source triangle and the triangle after reconstruction.

14. (Previously Amended) Image encoding method according to claim 1, characterized in that it is implemented on an error image corresponding to the deviation between the source image and an approximate image, obtained by implementing a preliminary distinct method of encoding.

15. (Previously Amended) Image encoding method according to the claim 14, characterized in that said preliminary method of encoding is a method of approximation by refining that implements a hierarchical mesh from which a quaternary tree is constructed having as many levels as there are levels in said hierarchical mesh, each of said levels having a number of nodes equal to the number of triangles in the corresponding mesh level,

and in that, for nodes meeting a predetermined criterion (103), said preliminary encoding is advantageously replaced by an encoding according to claim 1.

16. (Original) Image encoding method according to the claim 15, characterized in that said predetermined criterion relies on the luminance deviation between the triangle of the approximate image and that of the source image.

17. (Previously Amended) Image encoding method according to the claim 16, characterized in that, for each node:

- a luminance deviation between the image to be encoded and the image interpolated on the triangle is computed from the peaks of the nested mesh to which the node considered belongs;
- said luminance deviation is compared with a threshold difference;
- the following choices are made:
  - if said luminance deviation is below said threshold difference, the approximation method is interrupted by the refining of the hierarchical mesh for the node considered;
  - if said luminance deviation is higher than said threshold difference but below a second threshold, said method implementing a hierarchical mesh (106) continues (104) to be applied;
  - if said luminance deviation is higher than said second threshold, the encoding method according to claim 1 is implemented.

18. (Original) Image encoding method according to the claim 17, characterized in that said second threshold is equal to $k \times S$ with:

k: real number greater than or equal to 1;

S: real value proportional to the mean error luminance deviation.

19. (Previously Amended) Image encoding method according to claim 16, characterized in that said luminance deviation represents a mean squared error or an absolute error between said source triangle and the corresponding approximate triangle.

20. (Currently Amended) Method for the decoding of data representing an image encoded according to a method comprising, for a field corresponding to [[a]] at least one image portion, the following steps:

- the definition of a minimum triangular partition overlapping said domain thereby defining source triangles;
- the association, with each of said source triangles, of a square matrix representing said source triangle, by means of a first invertible transformation;
- the application of a second decorrelating invertible transformation to each of said square matrices, delivering transformed matrices[[.]] ,

characterized in that it comprises the following steps of reconstruction of an approximation of the original image:

a) the application of a inverse transformation to said second invertible decorrelation transformation on said transformed matrices, delivering said reconstructed square matrices;

b) the association, with each of said reconstructed square matrices, of a corresponding reconstructed triangle by means of an affine transformation that is the inverse of said first invertible transformation;

c) the reconstruction of said minimum partition from said reconstructed triangle.

21. (Currently Amended) Decoding method according to the claim 20, characterized in that said square matrices are recreated from data of a received binary string whose decoded data are the coefficients of the triangle to be reconstructed which form the lower part of said matrix.

22. (Previously Amended) Decoding method according to claim 20, characterized in that it implements the steps a), b) and c) on one part of the received binary string only, the other part of the binary string having been encoded and being decoded according to another method.

23. (Original) Decoding method according to the claim 22, characterized in that said binary string comprises, firstly, data encoded according to a preliminary encoding method and, secondly, data encoded by means of said invertible transformations, said decoding method comprising:

- a preliminary decoding of said data encoded according to a preliminary encoding, enabling the description of an initial representation;
- a complementary decoding of said data encoded by means of said invertible transformations, implementing steps a), b) and c) and enabling the refining of said initial representation.

24. (Previously Amended) Decoding method according to claim 22, characterized in that, with said preliminary encoding implementing a hierarchical coding, said preliminary decoding provides for the reading, in the received binary string, of at least one of the pieces of information belonging to the group comprising:

- the number of levels of the hierarchy;
- the identification of the encoding technique used for each of the triangles;
- the succession of the differential values of the components associated with the nodes of said hierarchical mesh;
- the identification of the arcs on which a diagonal inversion is made.

25. (New) Image encoding method according to claim 1, wherein each transformed matrix represents one of said source triangles.